

## ABSTRACT

Flexible proton electrolyte membranes, fuel cells, and methods for making membranes are disclosed. One exemplary membrane, among others, includes a flexible proton electrolyte membrane having the characteristic of a proton conductivity of about  $1 \times 10^{-6}$  to  $1 \times 10^{-1}$  S/cm at a temperature range of about 30°C to about 180°C and a relative humidity of about 0% to 100%.